

# *Pterostylis caligna* M.T.Mathieson (Orchidaceae), a new species from northern Queensland

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## Summary

Mathieson, M.T. (2013). *Pterostylis caligna* M.T.Mathieson (Orchidaceae), a new species from northern Queensland. *Austrobaileya* 9(1): 102–106. *Pterostylis caligna* is described as new. It is a tuberous, terrestrial herb known only from the Hann and Windsor Tablelands in northern Queensland and is readily distinguished from any other members of the genus by its unique combination of characters. The species is illustrated and diagnosed herein. Its conservation status is assessed and a status of Vulnerable is recommended.

Key Words: Orchidaceae, *Pterostylis*, *Pterostylis caligna*, Australia flora, Queensland flora, new species, taxonomy, conservation status.

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## Introduction

The greenhood orchids of Australia are diverse and occur in many habitats throughout eastern and southern Australia (Janes & Duretto 2010; Jones & Clements 2002) with a number of new *Pterostylis* species having been described in recent years (Jones 2009a, 2009b, 2010a, 2010b; Jones & French 2012). Nine species are currently known from the Wet Tropics of north Queensland (Jones 2006, 2010a; Bostock & Holland 2010).

During a visit to the Hann Tableland, west of Mareeba in north Queensland in May 2010, the author discovered a population of *Pterostylis* R.Br. that did not match any named species. However, one specimen at BRI corresponded with this species. Further material was collected in March 2012 and April 2013, enabling its distinctiveness to be confirmed and its formal description herein. I follow the classification of Janes & Duretto (2010) under which this species keys to *Pterostylis* subg. *Pterostylis* sect. *Foliosae*.

## Materials and methods

This research is based on a study of herbarium specimens and associated spirit collection at BRI and CNS, and field studies at the type

and other noted localities. All measurements have been made from live material or material preserved in spirit.

Abbreviations in the specimen citations include NP (National Park). RE refers to Regional Ecosystem, descriptions of which can be viewed at (in this case): <http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/index.php>

## Taxonomy

***Pterostylis caligna* M.T.Mathieson sp. nov.** ab omnibus aliis speciebus *Pterostylis* sepalis lateralibus clavatis, galea decurva apice sepalis dorsalis filiformis clavati, labello semper abscondito et apice suo rotundato vel obtuse acuto distat. **Typus:** Queensland. COOK DISTRICT: Hann Tableland National Park, NW of Mareeba, 8 April 2013, *M.T. Mathieson MTM1438 & P.I.Forster* (holo: BRI [1 sheet + spirit]; iso: CNS, *distribuendi*).

Tuberous, terrestrial herb growing in clonal colonies. Tubers globose to ovoid, 6–9 mm long, 5–9 mm wide when fertile. Leaves 3–5 in a rosette encircling the base of the scape, mid-green; lamina linear-ovate to oblong-ovate, 14–34 mm long, 9–19 mm wide, margins entire or occasionally crisped, apex obtuse to bluntly acute; petioles 3–13 mm long, slender, not winged. Scape 42–100 mm

tall, 0.9–1.2 mm wide, glabrous; stem bracts, sterile 1 (rarely 2), fertile 1, 8–15 mm long, 2.5–5 mm wide, lanceolate, acute, sheathing at base, margins entire. Flower solitary 17–23 mm long, erect, translucent white with pale to bright green stripes on the galea and sinus. Galea slightly gibbous at the base, then erect before curving forwards in a semicircular fashion with the tip decurved. Dorsal sepal translucent white with bright green stripes, three narrow inner stripes and two broad marginal stripes which coalesce in the distal quarter, 15–20 mm long, 6–9 mm wide, inflated at the base and tapered beyond to the apex with a slight constriction in the proximal third, apex filiform, clubbed, 2.5–3 mm long. Lateral sepals erect closely embracing the galea; sinus protruding slightly to moderately, shallowly curving inwards, the upper margin shallowly notched at the centre then curving upwards; conjoined part 7–10 mm long, 6–8 mm wide, narrowed to *c.* 2.5 mm at the base, bright green fading somewhat towards the base, the upper margins inrolled, gradually tapered into the free points; free points filiform, minutely clubbed, 8–13 mm long, erect, held upright above the galea. Petals asymmetrically lanceolate, falcate, 13–16 mm long, 3.5–4.5 mm wide, tapered in the distal half, apex acute to subattenuate, largely bright green with a small area of the central proximal section translucent pale green to white; flange 1–1.2 mm wide, broadly deltate, obtuse. Labellum attached to a short basal claw *c.* 1 mm long, erect, slightly curved in the distal quarter, not visible through the sinus in the set position, green in the proximal half and suffused tan-brown distally; lamina narrowly oblong to narrowly oblong-lanceolate, 5–7 mm long, 1.5–2 mm wide, slightly constricted in the distal half; apex bluntly acute to rounded; central callus slightly raised, running the length of the labellum ending just short of apex, *c.* 0.25 mm wide tapered to *c.* 0.1 mm in the centre, green in proximal half, tan-brown distally; basal appendage linear 2–3 mm long, curved, apex irregularly lobed. Column green, brown and white, 6–7 mm long, erect, angled away from ovary at about 40° in the proximal quarter, then erect. Column wings 3–4 mm long; basal lobe 1.5–2 mm long, *c.*

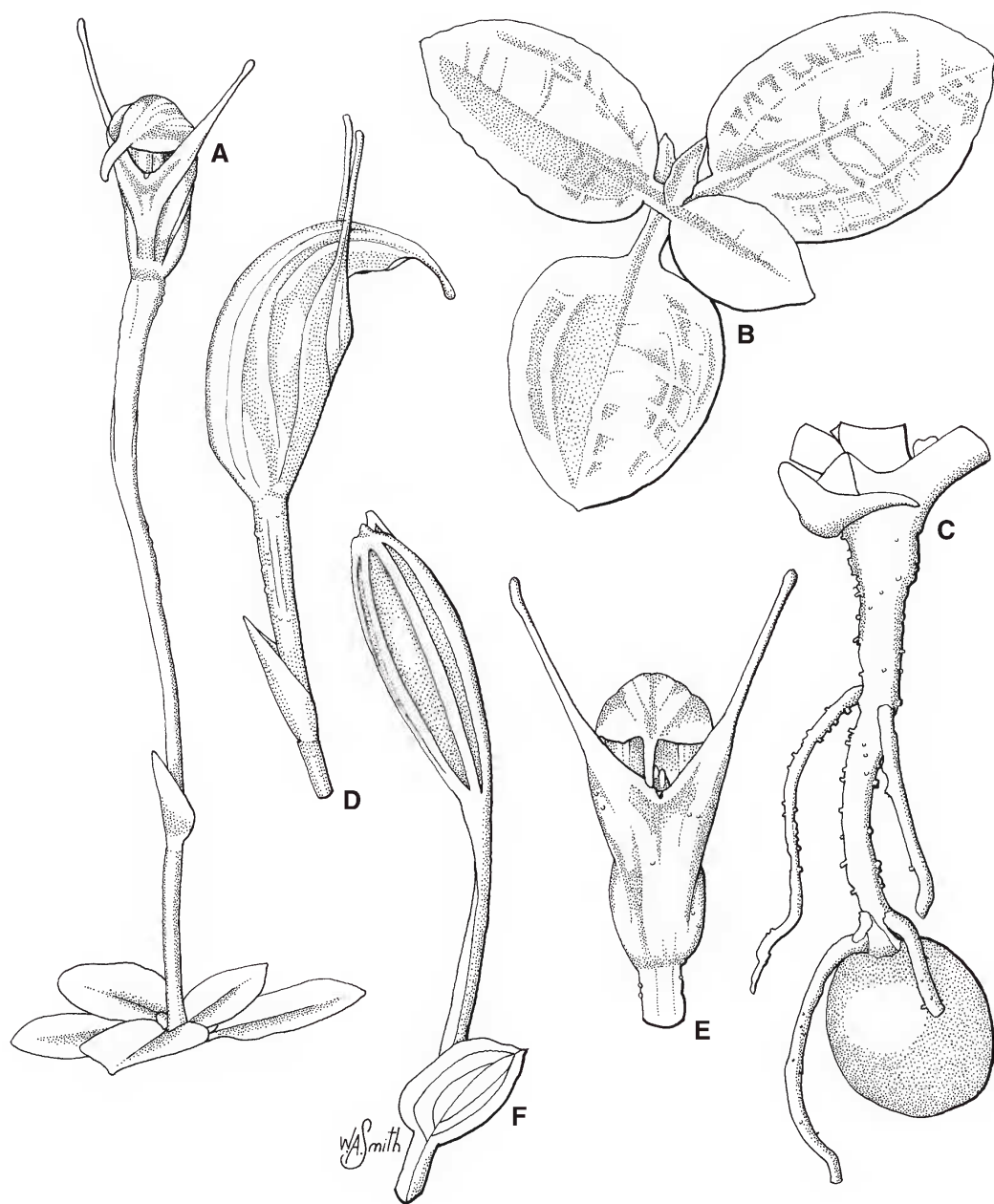
1.2 mm wide, green and brown, at an angle of 50°, apex obtuse, inner margins incurved, sparsely adorned with short, translucent white cilia; mid section 0.8–1 mm long, brown and white; apical lobe, white, linear, 0.6–0.7 mm long, obtuse. Stigma elliptic, 1.5–1.8 mm long, *c.* 0.75 mm wide, raised, situated centrally on the column. Anther *c.* 0.7 mm, shortly rostrate. Pollinia linear-clavate, 0.6–0.7 mm long, yellow, mealy. Ovary cylindrical to slenderly obovoid, 6–11 mm long, 1.5–2 mm wide, green, irregularly ribbed. Capsule narrowly obovoid, 13–18 mm long, 4–5 mm wide, ribbed, smooth. **Fig. 1–3.**

**Additional specimens examined:** **Queensland.** COOK DISTRICT: Hann Tableland NP, NW of Mareeba, May 2010, *Mathieson MTM828 & Forster* (BRI); Windsor Tableland NP, N of Mt Carbine, Apr 2013, *Mathieson MTM1523, 1555 & Forster* (BRI); Windsor Tableland, Jan 2009, *Sankowsky 3084 & Sankowsky* (BRI).

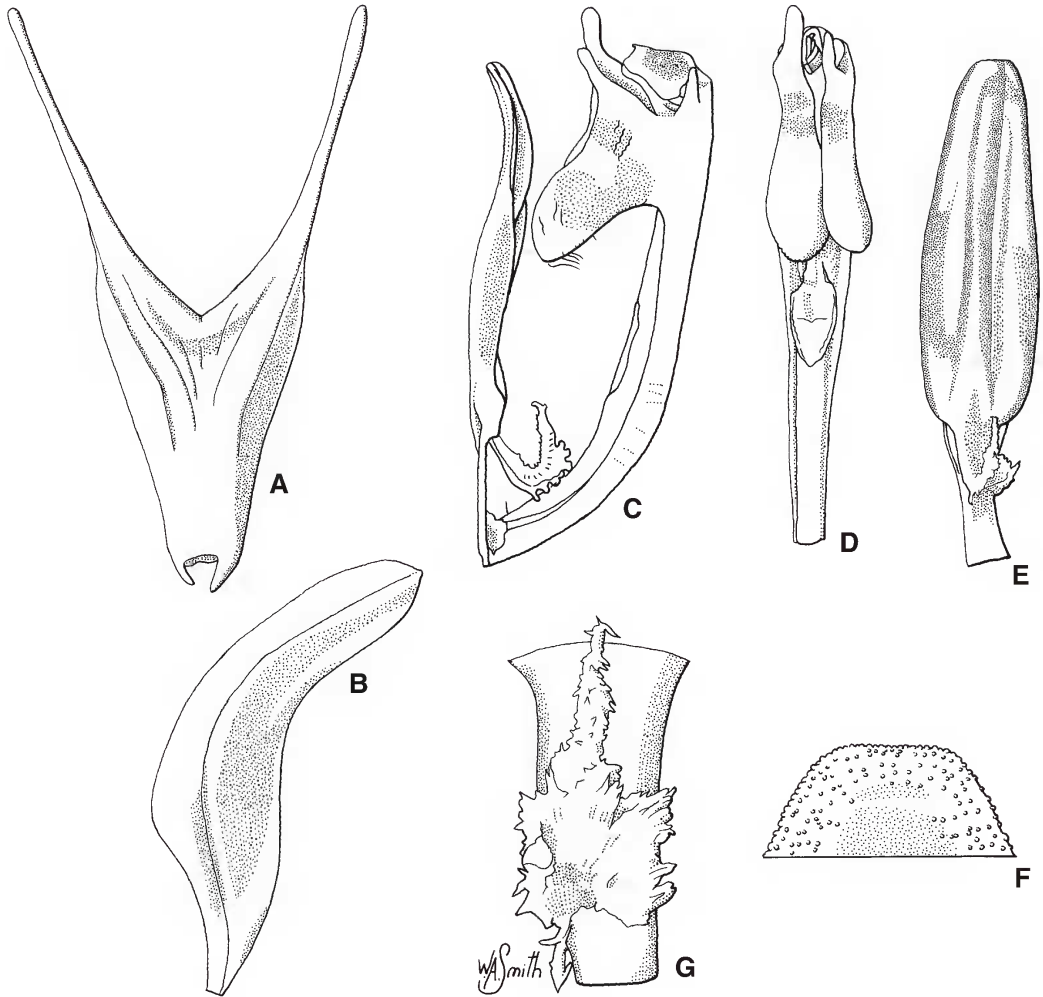
**Distribution and habitat:** *Pterostylis caligna* is endemic to northern Queensland and has been found only in the Hann Tableland NP, about 20 km north-west of Mareeba and Mt Windsor NP approximately 90 km north-north-west of Mareeba. It grows in simple notophyll vine forest with emergent *Agathis robusta* (C.Moore ex F.Muell.) F.M.Bailey on granite (RE 7.12.16a) on the Hann Tableland and in simple to complex notophyll vine forest with emergent *Agathis robusta* (RE 7.12.7a) on the Windsor Tableland between 880 m and 1000 m. At both localities, this species appears to be associated with vine forest–open forest ecotones.

**Phenology:** Flowers and fruits are recorded for January through to April; also in May, when very few flowering plants were observed and most fruit had dehisced.

**Affinities:** *Pterostylis caligna* stands apart from all other members of the genus by the following characters: clubbed lateral sepals, decurved galea with apex of dorsal sepal filiform and clubbed, labellum always concealed when in the set position and labellum apex rounded or bluntly acute. Sterile rosettes can resemble those of *Pterostylis taurus* M.A.Clem. & D.L.Jones.



**Fig. 1.** *Pterostylis caligna*. A. whole plant  $\times 2$ . B. rosette  $\times 2$ . C. root stock and tuber  $\times 4$ . D. flower from the side  $\times 3$ . E. flower from the front  $\times 3$ . F. undehiscent capsule  $\times 3$ . All from Mathieson MTM1438 & Forster (BRI). Del. W.Smith.



**Fig. 2.** *Pterostylis caligna*. A. lateral sepals (synsepalum)  $\times 4$ . B. petal  $\times 4$ . C. column and labellum from the side  $\times 8$ . D. column from the front  $\times 12$ . E. labellum from above  $\times 12$ . F. labellum apex  $\times 32$ . G. basal appendage of labellum from above  $\times 32$ . All from Mathieson MTM1438 & Forster (BRI). Del. W.Smith.

**Conservation status:** This species is known from three locations; one within the Hann Tableland NP and two in the Windsor Tableland NP. It was not encountered elsewhere on the Hann Tableland despite extensive searches in similar habitats during three expeditions between 2010 and 2013. It is likely to occur elsewhere on the Windsor Tableland and adjacent ranges in the Wet Tropics biogeographic region given the extent of appropriate habitat that exists.

The population at the type locality is estimated to be between 100 and 200 plants occupying an area of less than one hectare. The two populations on the Windsor Tableland were estimated at between 300 and 400 plants, both occupying an area of less than two hectares. Repeated fire events may threaten this species by encouraging the encroachment of introduced, hyperinvasive grasses (*viz.* giant rat's tail grass *Sporobolus pyramidalis* (Lam.) Hitchc., grader grass *Themeda quadrivalvis* (L.) Kuntze and



gamba grass *Andropogon gayanus* Kunth), the rampant herbaceous weed *Praxelis clematidea* R.M.King & H.Rob. and lantana *Lantana camara* L. into its' ecotone habitats. Applying criteria of the IUCN (IUCN 2001), the recommended conservation status is Vulnerable (D1, D2).

**Etymology:** From the Greek *calignis* – of the mists, in reference to the upland cloud forest this species inhabits.



**Fig. 3.** *Pterostylis caligna*, side view of the flower, photographed in habitat (Mathieson MTM828).

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